DOCUMENT RESUME

ED 223 656 TM 820 751

AUTHOR Wagner, Betty S.
TITLE Developmental Assessment of Infants and Toddlers in Child Care Programs.
PUB DATE Oct 82
NOTE 21p.; Paper presented at the Annual Meeting of the Texas Association for the Education of Young Children (18th, Fort Worth, TX, Oct. 6-9, 1982).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS Behavior Development; *Behavior Rating Scales; Cognitive Development; Data Collection; *Developmental Stages; Handicap Identification; High Risk Persons; Infant Behavior; *Infants; *Observation; *Test Construction; *Young Children
IDENTIFIERS Gutman Scales; *Mental Development Scales Birth to Three Years; Statistical Analysis System

ABSTRACT

The Mental Development Scales: Birth to Three Years are instruments designed to assess developmental levels of young children within a setting familiar to the child. They (1) provide a greater understanding of child behavior and development, (2) serve as a basis for planning an individualized curriculum for each child, and (3) furnish the means for comparing a child with herself or himself over time. They were prepared for use by professionals, including teachers in group settings, day care directors, and professional home visitors. The instrument contains six scales: (1) spontaneous drawing; (2) block play; (3) object exploration; (4) social responsiveness and discovery of selfhood; (5) communication; and (6) play. Each scale is divided into five developmental levels with each scale yielding a separate score. (Author/PN)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED223656

DEVELOPMENTAL ASSESSMENT OF INFANTS AND TODDLERS IN CHILD CARE PROGRAMS

Texas Association for the Education of Young Children

October 6-9, 1982

Fort Worth, Texas

Betty S. Wagner, Ph. D.
Home and Family Life Department
Texas Tech University
Lubbock, Texas

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

✓ This document has been reproduced as received from the person or organization originating it.
Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
Betty S. Wagner
TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

Tm 820 251

DEVELOPMENTAL ASSESSMENT OF INFANTS AND TODDLERS IN CHILD CARE PROGRAMS

Abstract

An instrument, the Mental Development Scales: Birth to Three Years was designed to assess developmental levels of children birth to three years within a setting familiar to the child. Infants and toddlers are assessed in a semi-structured mode in the areas of spontaneous drawing, play with blocks, object exploration, social responsiveness, self awareness, communication, and pretend play. The six scales of the instrument are divided into five developmental levels with each scale yielding a separate score. The study sample consisted of 112 subjects. Reliability and validity data are given. Guttman scaling established the ordinality of behaviors within each scale.

DEVELOPMENTAL ASSESSMENT OF INFANTS AND TODDLERS IN CHILD CARE PROGRAMS

Betty S. Wagner

INTRODUCTION

The last decade has seen a surge of interest in the early phases of human development. This quest for an understanding of the effects of early experience on the individual has led to numerous research studies concentrated on basic cognitive, language, and psycho-social processes during the first three years of life (Kagan, Kearsley, & Zelazo, 1978). Preceding this recent psychological study of the young child an older source of information regarding the way children develop and learn evolved from the testing movement in the earlier half of this century (Gesell & Amatruda, 1941). These foundation studies of child behavior have been influential in child-rearing manuals and child development textbooks. In addition, recent information from longitudinal studies of human intelligence has made possible a re-analysis of methods of assessing development during early childhood (McCall, Eichorn, & Hogarty, 1977).

Within the educational field a concern emerged in the late 1960's and the 1970's which was related to the developmental studies: that of providing an optimal environment, both at home and at school, for the young child (Frost, 1973).

The educational aspect of day care for young children has also received national attention in recent years. Many

day care centers now keep developmental records on the enrolled children, sometimes using these records as the basis for curriculum development. A review of present checklists of behaviors reveals that few exist for this period of infancy and toddlerhood which are scaled and for which validity and reliability measures have been established.

Existing standardized tests require procedures which are difficult to follow within the group care setting. In addition, tests which yield a single score do not fully meet the needs of the educational setting.

A need, therefore, exists for an instrument constructed for use by teachers and other professional personnel to assess behaviors of infants and toddlers in an educational setting. It is anticipated that the instrument described in this paper, the Mental Development Scales: Birth to Three Years, might form a base for the preparation of an individualized program for each child. The procedure for constructing the scales and determining their psychometric characteristics will be reviewed.

PROCEDURES

Constructing the Scales

Items for the six scales were derived from a literature review which concentrated on recent research in symbolic play, communication, cognition, self-awareness, and social-emotional development. Wherever feasible, the items were incorporated into situations designed to facilitate play and natural

interactions of the child with persons or objects in the environment. Behaviors were arranged in an estimated sequence within the scales. Each scale was then divided into five developmental levels to approximate the stages identified by McCall, Eichorn, and Hogarty (1977), in their re-analysis of responses to the Bayley Scale of Infant Development. In administering the test with children scores are derived for each scale.

Samples

The validation sample consisted of 15 subjects. Children from birth to 30 months were assessed with the Bayley Scales of Infant Development. Children from 30 to 36 months were assessed with the Stanford-Binet Intelligence Scale. All 15 subjects were assessed with the study instrument, the Mental Development Scales: Birth to Three Years (MDS). Scores from the MDS were correlated with scores from the standardized tests.

The study sample consisted of 112 subjects stratified to approximate the characteristics of the United States (Current Population Reports, 1980) and Texas (Texas Almanac and State Industrial Guide, 1977). Table 1 summarizes the characteristics of the study sample.

INSERT TABLE 1 ABOUT HERE

A cumulative risk score calculated for each subject was used to secure heterogeneity of the study sample. The

risk score incorporated social class as a risk factor along with medical events from the prenatal, perinatal, and postnatal periods. Hobel, Hyvarinen, Okada, & Oh (1973) consider 16 percent of the infants born in the United States to be in a high risk category.

Data Collection

The data were collected from the study sample between March, 1980 and August, 1981. Data were collected from the validation sample in January through March, 1980. The author and three assistants assessed the subjects in seven child care centers, homes, and the Texas Tech University Developmental Disability Unit of the Research and Training Center, all in Lubbock, Texas.

The Interobserver Agreement Study

The four data collectors made a total of 40 paired observations of the 127 children in the validation and study samples. These data were analyzed by the Pearson product-moment correlation method.

Statistical Treatment

The Statistical Analysis System (SAS) Guttman scaling program was utilized to establish the reproducibility and scalability of each scale. The reliability of each scale was calculated using the Proctor option of the SAS which compares an estimate of responses with actual observed responses. The Guttman program re-sequenced the items within scales according to the number of positive responses recorded. The unidimensionality of each scale was determined by

correlating each item of the scales to the sum of the other items. A summary of results is reported in Table 2.

INSERT TABLE 2 ABOUT HERE

As shown in Table 2 all measures of each scale exceeded the minimum acceptable standards except the validation measure of the play scale. The author wishes to reserve judgment on the play scale, however, until the data analysis from a follow-up study is completed. It seems possible that this measure of symbolic development might exhibit some measure of predictive validity even though concurrent validity was not established.

Finally, the average age for attainment of each item at the 50 percent level was calculated. This information is reported for each item within the six scales in Table 3.

INSERT TABLE 3 ABOUT HERE

The next step will involve establishing replication sites in order to collect data from a study of children in various locations. From this data more complete normative statistics for each item will be established.

Implications

Assessment of children with the Mental Development Scales: Birth to Three Years may serve the following purposes: (1) to provide a greater understanding of child

behavior and development, (2) to serve as a basis for planning an individualized curriculum for each child, and (3) to furnish the means for comparing a child with himself over time. This instrument was prepared for use by professional persons who are competent in working with infants and toddlers. These professional persons may include teachers in group setting, day care directors, and professional home visitors. Within group care settings the child may be assessed without separating him from the group. Uniquely designed for use in an educational setting, this instrument may meet child care center needs to assess developmental levels of infants and toddlers.

TABLE 1

CHARACTERISTICS OF STUDY SAMPLE

Characteristic	Number	Percentage
Ethnic Group		
Anglo	82	73.2
Black	13	11.6
Hispanic	17	15.2
Total	112	100.0
Risk Factors		
None	34	30.36
1	26	23.21
2-4	35	31.25
5+	17	15.18
Total	112	100.00
Sex		
Male	51	45.5
Female	61	54.5
Total	112	100.0
Age in Months		
0 - 7	22	19.64
8 -15	24	21.43
16-23	24	21.43
24-30	21	18.75
31-39	21	18.75
Total	112	100.00

TABLE 2

SUMMARY ANALYSIS OF INSTRUMENT

	Spontaneous Drawing	Block Play	Object Expl.	Social Resp.	Communication	Play
Validation Significance Level (Pearson Probability)	.0004	.0003	.0001	.0001	.0005	*.091
Interobserver Agreement (Pearson Probability)	.0001	.0001	.0001	.0001	.0001	.0001
Unidimensionality Significance Level Range (Pearson Probability)	.01-.0002	.002-.0002	.002-.0002	.002-.0002	.0002	.0002
Reproducibility Range	.997	.938 - .984	.946 - .993	.962 - .984	.955 - .986	.979
Scalability Range	.984	.684 - .958	.675 - .941	.834 - .900	.666 - .946	.927
Reliability Range	.998	.969 - .998	.984 - .999	.984 - .994	.986 - .993	.993

*Failed to meet criterion

TABLE 3

ITEMS FROM MENTAL DEVELOPMENT SCALES:
BIRTH TO THREE YEARS

Item	50% level of attainment (Mos.)
SPONTANEOUS DRAWING SCALE	
1. Scribbles only	13
2. Places marks	24.5
3. Crosses lines	25.5
4. Draws shapes	34
5. Attempts to combine shapes	-
6. Combines 3 shapes	-
7. Draws face shapes, rays, or transitional radials	-
BLOCK PLAY SCALE	
1. Grasps block	3.5
2. Transfers block from hand to hand	4
3. Grasps 1 block with 2 hands	7.25
4. Bangs block on table	6.75
5. Holds 2 at midline	9
6. Attempts to hold 3 blocks	10
7. Pushes 1 block with another	10
8. Holds 1 on another; does not release	11.25
9. Stacks 1 on another; block falls	13.5
10. Stacks 2, matching or unmatching	13.75
11. Builds tower of 3, matching or unmatching	14.75
12. Stacks 2 identical blocks (2 times)	15
13. Searches out 2 identical blocks; bangs at midline	15.5
14. Builds tower of 5 blocks	17.25
15. Removes 1 block from stack to table	17.25
16. Sets blocks on edge or small end (2 times)	18

Item	50% level of attainment (Mos.)
17. Horizontally aligns 2 blocks, matching or unmatching	21.5
18. Moves a block from 1 stack to another	21.5
19. Aligns identical blocks	22.75
20. Moves 3 blocks from 1 stack to another	24.5
21. Centers small block on large block	24.5
22. Spaces 2 identical blocks near, but apart	25.5
23. Constructs symmetrical horizontal string of blocks	33
24. Builds complex symmetrical structure	-

OBJECT EXPLORATION SCALE

Item	50% level of attainment (Mos.)
1. Visually inspects surroundings	-
2. Alternates glances	2
3. Follows rolling object	3
4. Locates object by sound	3.5
5. Uses gestures to continue event	6.75
6. Touches to continue event	6.75
7. Visually follows dropped object	6
8. Watches object he drops	7.75
9. Reverses object to look at other side	9.5
10. Detours around barrier	9.5
11. Drops object into container; empties	9.5
12. Dangles ring	10
13. Unwraps object	11
14. Hands object to adult	12
15. Finds object in 2 containers	13
16. Detours, no trajectory	12
17. Activates object by starting motions	13.75
18. Finds object in 3 containers	14.27
19. Obtains toy with stick	16.5
20. Continues event by locating cause	22.75
21. Distinguishes open from closed objects	25

Item	50% level of attainment (Mos.)
22. Matches objects to photographs	25
23. Works vertical puzzle (3 parts)	25
24. Matches topological shapes	26
25. Distinguishes rings from discs (2 times)	26
26. Matches invisible to visible object	31.5
27. Works vertical puzzle (5 parts)	26.5
28. Matches Euclidean shapes	26.25
29. Matches invisible open and closed objects	31.5
30. Matches invisible rings and discs	33.25

SOCIAL RESPONSIVENESS AND DISCOVERY OF SELFHOOD SCALE

Item	50% level of attainment (Mos.)
1. Attends to human face	.5
2. Smiles at human face	1.25
3. Focuses attention on hands	3.5
4. Focuses attention on feet	3.5
5. Reaches for or pats mirror	3.75
6. Explores faces with hands	5
7. Turns to familiar person	6.75
8. "Shows" toy	10
9. Points to eye, nose, ear, and feet of doll (3 parts)	17
10. Touches nose	17.75
11. Looks through tube	18
12. Initiates own activity	18
13. Uses words, "mine" or "my"	17.25
14. Attempts to dress self	21.5
15. Works body puzzle (2 parts)	26
16. Places 1 eye to tube	32
17. Works body puzzle (6 parts)	30.75
18. Approximates expressions	33.25
19. Locates parts used for seeing and hearing	-

COMMUNICATION SCALE

Item	50% level of attainment (Mos.)
1. Quiets to sound of human voice	-
2. Vocalizes vowels, gurgles, or squeals (2)	1.25

Item	50% level of attainment (Mos.)
3. Duplicates lip movements	1
4. Responds to gestures	4.25
5. Laughs aloud	3.75
6. Vocalizes consonants	5
7. Alternates vocalization with adult	5
8. Makes "m-m-m" sounds	8.25
9. Responds to own name	8.75
10. Babbles, "Da-da-da" or "Ma-ma-ma"	8.75
11. Makes "Ah-ha" sounds	10
12. Vocalizes to call or initiate play	10
13. Waves bye-bye	11
14. Uses jargon	12
15. Uses 1 word, not "Ma-ma" or "Da-da"	12.5
16. Responds to "Give me the ball" and gestures	14.25
17. Uses word for negation	15.5
18. Names 2 objects	15.5

Item	50% level of attainment Mos.)
19. Uses word to indicate action or result of action	15.75
20. Follows 1 request (no gestures)	17.25
21. Names 2 pictured objects	17
22. Uses 2-word sentences	18
23. Uses 2 and 3-word sentences	20.75
24. Asks for "another" or "more"	18
25. Understands "on" and "in"	25
26. Uses own name	27
27. Asks questions	26
28. Identifies sex in pictures (3 times)	27
29. Understands "on", "in", and "under"	27.75
30. Identifies self as boy or girl	30.75
31. Uses past tense	30.75
32. Whispers	33.25
33. Uses plurals	33.25
34. Understands "in", "on", "under", and "in-front-of"	33

Item	50% level of attainment (Mos.)
35. Refers to self as "me"	35.75
36. Tells story about picture	-
PLAY SCALE	
1. Uses a common object on self	12.25
2. Combines 2 objects correctly	14.25
3. Gives care to doll or another person Alternate: Borrows 2 objects from doll	16.5
4. Uses 2 objects on doll or another person	19.5
5. Substitutes 1 object for another: Alternate: Identifies imaginary food	28.75
6. Places object for doll to "use"	32.25
7. Acts out event with real or imaginary person	33.25
8. Connects 3 episodes of play in series	-

References

Current population reports: population characteristics: population profile of the United States: 1979, Series P-20, No. 350, Issued May, 1980.

Frost, J.L. (Ed.) Revisiting early childhood education: readings. New York: Holt, Rinehart & Winston, Inc., 1973.

Gesell, A. & Amatruda, C. Developmental diagnosis. New York: Paul B. Hoeber, Inc., 1941.

Hobel, C.J. Hyvarinen, M.A., Okada, D.M., & Oh, W. Prenatal and intrapartum high-risk screening. American Journal of Obstetrics and Gynecology, 1973, 117, 1-9.

Kagan, J., Kearsley, R.B., & Zelazo, P.R. Infancy: its place in human development. Cambridge, Mass.: Harvard University Press, 1978.

McCall, R.B., Eichorn, D.H., & Hogarty, P.S. Transitions in early mental development. Monographs of the Society for Research in Child Development, 1977, 42, (3, Serial No. 171).

Texas almanac and state industrial guide: 1978-1979. Dallas: A.H. Belo Corporation, 1977.